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Blueprint for Water coalition: evidence for the Institute of Civil Engineers State of the Nation report on water

Introduction

The UK faces some major water resources management threats in the coming years. As many of these are global threats, developing solutions to these problems could offer major benefits to the UK economy. The main threats are environmental degradation, particularly of UK rivers and wetlands, rising demand and reduced public water supplies, constraints on business operations (again both related to UK production and import), problems with power generation (due to lack of cooling water or cooling water at too high a temperature), flooding (coastal, pluvial, fluvial and groundwater), increased pollution incidents (particularly toxic algal blooms), failure of treatment plant (mainly due to changes in ambient temperatures affecting performance), and issues of discharges of wastewater due to insufficient dilution. These threats will not occur in isolation and the major threats lie with cascading failures due to interconnected infrastructure which is over-reliant on critical large plants in specific locations.

Infrastructure

The solutions promoted by the Institute of Civil Engineers (ICE) to address these threats are disappointingly old-fashioned 'predict and provide'. They are largely an extension of current thinking and over-reliant on expensive engineering solutions, e.g. new and enlarged reservoirs, more treatment plants and bigger sewers. They seem to be totally reliant on developing supply-side measures and even innovation is supply-side based with options such as desalination, with its high demand for energy. There is little or no systems-based thinking and very few examples of integrated solutions. Rather than embracing ICE's concrete vision of the future, we need to be investing in distributed infrastructure and soft solutions such as catchment management (protecting water quality at source, improving infiltration and helping to reduce flood risk), water efficiency retrofit, installation of Sustainable Drainage Systems (SuDS) and behaviour change programmes. Catchment management, for example, can address diffuse pollution at source, reducing water treatment costs.

Large-scale fixed infrastructure leaves us vulnerable to climate change: Australia has a large number of large reservoirs that remain empty for long periods, and hard flood defences on rivers like the Mississippi can fail catastrophically. The fact that we can no longer assume climate stability means that we must develop flexible infrastructure. However the funding systems, regulatory process and mindset in the UK mean that we are still wedded to new versions of the same infrastructure we inherited from the Victorians.

The UK's water infrastructure is inflexible and based around fixed lumpy assets which are vulnerable to climate change and not able to adapt to demographic, social or environmental change. The UK's water infrastructure is not suitable to manage current challenges and is not being developed in such a way that it will be able to face future challenges. The ICE report's plans include big infrastructure such as reservoirs which could have difficulty fulfilling their projected deployable



Wildlife and Countryside Link
89 Albert Embankment
London
SE1 7TP

T: 020 7820 8600
F: 020 7820 8620
E: enquiry@wcl.org.uk
W: www.wcl.org.uk

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outputs under most climate change scenarios – very expensive stranded assets of the future. The regulatory system and skills base in the water sector is geared towards developing large-scale big infrastructure; nothing is being done to develop the skills and tools to deliver distributed or flexible infrastructure.

Regulatory structure and approach

There seems to be an artificial debate around introducing competition into the water sector at all levels. This debate has been running since privatisation. The key is to ensure that water is properly valued rather than priced. Rather than prioritising allocations and promoting competition and trading between sectors and water companies governments should focus on efficient use: UK domestic consumption is at least a quarter higher than many other Northern European countries.

There is a misconception that there is a large regulatory burden on the water sector particularly in the form of European Directives. European Directives around water have had a major positive impact on the UK water environment and water sector. River and bathing water quality has improved dramatically. However there has been a failure to fully embrace the Water Framework Directive (WFD) and reluctance by governments and regulators to take the actions required for its full implementation. The WFD was structured around the English approach to catchment and river basin management. However the rigidity of the periodic review has thus far prevented the necessary spend being made at the right time. Long-term water management is currently a hostage of short-term financial management.

There is a bias towards capital expenditure (capex) over operating expenditure (opex) which favours hard engineering solutions (as recognised in Defra's recent Water White Paper). So we see water engineering in the UK using hard flood defences and reservoirs rather than using distributed assets or soft approaches such as influencing behaviour or establishing sustainable urban drainage systems that address both flooding and water quality.

The recent Defra Water White Paper sets out a plan to change the abstraction licensing regime, including incentives to trade: these are laudable aims but they are still couched in the context of water as a commodity. Water is not a commodity, and we need to stop creating artificial conflict between the needs of the environment and the needs of the consumer: if we value water correctly then it will be priced correctly. There is a real need to ensure that the abstraction review is set within the context of wider water management, we should have an abstraction and pricing regime that incentivises lower abstraction volumes. Sustainable approaches to water management can benefit both the consumer and the environment. If we introduce full metering and domestic water efficiency measures this will protect the environment and drive down bills both for specific customers and for the generic customer base as it will require less infrastructure investment in the future. Sustainable water management will also help to underpin both food and energy security, and ensure that those sectors using water become more resilient to scarcity and drought. Pricing needs to also encompass the treatment of wastewater, ensuring that the resource and environmental costs are reflected. This will help to control pollutants, including harmful chemicals, at source, thereby improving water quality.

Innovation and Skills

There is a skills and knowledge gap within UK water management on how to assess and implement soft engineering. The role of ICT in water management is generally overlooked; the level of investment in innovation is shockingly low. The incentives to innovate are lacking and indeed there are disincentives to innovation. The UK water sector currently invests less in research and development than any other sector apart from building. The UK's universities are still strong in hydrological sciences but this position is weakening constantly, Government research in water is limited and research in the private sector is also poor. The decision of the Technology Strategy Board (TSB) not to develop a research innovation platform for water in the UK is an indication of the lack of strength or ambition around research within the sector (although the new TSB innovation competition on water security announced in the Water White Paper is welcome).

There is also a lack of collaboration in the UK: the water industry tends to work in isolation and joint working with local communities, NGOs or other businesses is rare. This is partly because of the culture of the companies, but also because the regulatory regime does not encourage collaboration and because funding is fairly rigid and tied to large-scale schemes that are generally a repetition of schemes that have been built before. This is unfortunate since as the recent Water White Paper makes clear, wide stakeholder engagement is a key element in the protection and sustainable use of our water resources.

An area for considerable optimism, relates to the upcoming duty for new developments to install SuDS (as required under the Flooding and Water Management Act 2010). There will need to be considerable up-skilling in soft engineering knowledge and solutions both within Local Authorities, and across the development and engineering community in England in relation to sustainable drainage techniques. These new ways of engineering, that typically work more with natural processes and deliver a whole host of additional benefits, will set us well ahead of the curve in terms of future proofing society and delivering sustainable development. The new obligation for SuDS is a good example of where new regulation was necessary in order to create a shift-change in engineering approaches to benefit society at large.

The Way Forward

The Blueprint for Water coalition has laid out 10 steps towards sustainable water management¹; we believe that these should be established as a set of principles to guide future planning and management within the water sector. The ten steps are:

- Waste less water
- Keep our rivers flowing and wetlands wet
- Price water fairly
- Make polluters pay
- Stop pollutants contaminating our water
- Keep sewage out of homes and rivers and off beaches
- Support water-friendly farming
- Slow, manage and clean drainage from roads and buildings
- Protect and restore catchments from source to sea
- Retain water on floodplains and wetlands

This response is supported by the following members of the Blueprint for Water:

- Angling Trust
- Buglife – The Invertebrate Conservation Trust
- Royal Society for the Protection of Birds
- The Rivers Trust
- Waterwise
- Wildfowl and Wetlands Trust
- WWF-UK

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¹ Blueprint for Water coalition (2010) *Blueprint for Water*: <http://www.wcl.org.uk/blueprintforwater.asp>.